NASA Launches Satellite to Observe Galaxies

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NASA has launched a small satellite to explore the mysteries of how stars and galaxies form.

NASA's Galaxy Evolution Explorer, abbreviated as GALEX, began its mission on a Pegasus rocket, dropped from the wing of a jumbo jet high over the Atlantic Ocean. Minutes later, it separated from the rocket to enter a nearly 700 kilometer orbit.

GALEX is carrying a telescope that will scour the heavens with the most sensitive ultraviolet light detectors ever built. They will scan for the invisible light given off by galaxies dominated by young, hot, short-lived stars. Mission scientist Christopher Martin, of the California Institute of Technology, said this is just the kind of galaxy that might be in the process of forming stars.

"By comparing the ultraviolet brightness, we can determine how fast a galaxy is forming stars," he added. "Then by looking at many, many galaxies at various times in the cosmic history, we can put together a picture of the history of star formation in the universe."

Mr. Martin says comparing galaxies is necessary to determine how bursts of star formation relate to other factors. What are the conditions of the cosmic neighborhood it is in? Does the star-forming galaxy have a companion galaxy? Does the galaxy have lots of gas with which to make stars or just a little?

"It is still a mystery, the question of what causes stars to form in galaxies," said Mr. Martin. "We are interested in knowing when the stars formed, where they formed, and what were the triggers for star formation to occur in galaxies. What made galaxies grow with time?"

Astronomers believe the universe originated nearly 14-billion-years ago, during a cataclysmic explosion called the "Big Bang." The theory suggests that all matter was concentrated in an area the size of a pinhead and exploded outward in a fireball of the light gases helium and hydrogen.

Galaxies began to appear as these gases cooled and condensed. Recent observations suggest that the busiest period of star formation was eight to 10 billion years ago. GALEX is designed to investigate whether this is occurred and why.

A key question astronomers hope the telescope will help answer is how long ago heavy elements such as iron formed. These are the elements that make complex molecules and life on Earth.

"This is the first sky survey of ultraviolet light. It is amazing that it has not been done before and it is just fantastic that we are finally going to do it," said NASA astronomer Susan Neff.

The GALEX spacecraft is to begin gathering data after a one-month test phase and is scheduled to operate for 28 months.

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